The Western Coalition of Arid States
W E S T C A S

August 10, 2018

Via: S2SReportReply@noaa.gov

Mr. Dave DeWitt, Director
NCEP/Climate Prediction Center
National Oceanic and Atmospheric Administration
Division Office of Science and Technology Integration
College Park, Maryland

Attention: Comments on the annotated outline of the Subseasonal and Seasonal Forecasting Innovation: Plans for the Twenty-First Century Report

Dear Mr. Dewitt:

The following comments are submitted by WESTCAS, a coalition of nearly 100 water and wastewater districts, cities, towns, and professional organizations focused on water quality and water quantity issues in the States of Arizona, California, Colorado, Nevada, New Mexico, and Texas. Our mission is to work with Federal, State, and regional water-related agencies to promote scientifically sound laws, regulations, appropriations, and policies that protect public health and the environment in the arid West.

We appreciate the opportunity to provide comments on the annotated outline of the Subseasonal and Seasonal Forecasting Innovation: Plans for the Twenty-First Century Report being prepared for submission to Congress. The report will serve as a guidepost for NOAA planning and execution on subseasonal to seasonal (S2S) forecasting with the goals of (i) improving the reliability of the S2S forecasts, and (ii) enhancing the value of S2S products for stakeholders.

Among our members, there is a strong need for improved and reliable S2S forecasting, especially given recent drought extremes and increased pressures on water resources in the arid West. S2S forecasting would support our members' decision-making on many facets of water management, including:

- Providing lead-time for preparing for extreme events;
- Deciding about storing and distributing water supplies, including the management of dams, flood storage, and reservoirs;
- Estimating water availability to users;
- Making decisions about managing for shortages through increased water conservation and implementation of contingency measures; and
- Providing lead-time to negotiate and permit water transfer agreements.

Reliable forecasts at a seasonal timescale would be especially useful for our members who are making budgetary and rate setting decisions and making water supply forecasts for the coming year.

WESTCAS members have expressed a strong interest in using seasonal forecasts to support water management decisions. However, the current accuracy of NOAA Climate Prediction Center precipitation outlooks is insufficient to support our members' need for reliable and trusted decision-making. Some examples from our member agencies follow:

- Tarrant Regional Water District (TRWD), a water district that supplies raw water for more than 2.3 million people in the western and southern Dallas–Fort Worth metroplex, has begun integrating S2S climate data into forecasting hydrologic inflows. TRWD uses S2S projections as a guideline. However, the broad likelihood categories are not sufficiently reliable to estimate rainfall/runoff or even actionable probabilities. The broad geographical scale of the data limits its applicability for these uses; state specific or even regionally downscaled data would be more useful.
- Coachella Valley Water District (CVWD), a California water district providing domestic water, wastewater, recycled water, irrigation/drainage and regional stormwater protection services, uses weather forecasts to time Colorado River water orders and manage operations of key groundwater replenishment and stormwater infrastructure. Reliable S2S data and tools would provide improved lead-time for water supply management and for planning and re-prioritization of staff resources to respond to weather events. Other decisions that could be supported by reliable S2S forecasting include budget planning for imported water supplies and water conservation programs.
- The Metropolitan Water District of Southern California (MWD), a regional wholesaler that delivers water to 26-member public agencies which in turn provide water to approximately 19 million people in Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura counties relies on water from the Colorado River and the California Department of Water Resources' State Water Project. Improvements in predictive capabilities for shifts or transitions from a persistent high-pressure ridge off the West Coast that blocks storms from reaching California until the ridge breaks down would provide useful lead-time for water management decisions. Seeking to forecast the probability of atmospheric river events would improve S2S precipitation forecasting.
- The Salt River Project (SRP) in Arizona manages the water resources generated from the 13,000 square mile Salt and Verde Rivers' watershed and a portion of East Clear Creek watershed. SRP operates the 7 reservoirs of the Salt River Reclamation Project. In addition, SRP conjunctively manages groundwater resources generated from over 270 wells within Project lands of the Phoenix metropolitan area. Combined, these water resources provide the majority of the water used by 10 Valley cities which have a combined total population exceeding 3 million. Improved S2S forecasts would allow sufficient lead times for SRP to adjust reservoir operations and supplemental pumping to optimize storage levels. This would lead to more efficient operations, reduced costs to shareholders, increased reservoir yield, and reduced groundwater pumping, thus saving this resource for later use in severe drought conditions.

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We appreciate the opportunity to comment on the report outline and offer the following comments for your consideration:

- Improving precipitation-forecasting skills in a timely fashion is critical. NOAA needs to demonstrate how it will substantially increase the resources dedicated to S2S forecasting to generate improvements at two-month and longer lead-times within the next five years. The water sector faces many difficult management challenges and cannot afford to wait a decade or more for better forecasting tools to support reliable decision-making and to mitigate the impacts of federal regulatory decisions that have increased the complexity of water resources management. NOAA should pursue pilot projects to demonstrate the capability of making fall and winter forecasts of maximum spring precipitation accumulation for river basins.
- The existing resources that NOAA is providing for preparing operational S2S outlooks and the research to support that effort are clearly inadequate. Improving forecast skills will require a sustained commitment of increased resources. For example, such resources would support the use of regional influences, such as tropical convection to improve West Coast and Southwest S2S precipitation forecasting and local convection and the land surface for spring and early summer precipitation forecasting in the interior West states.
- NOAA needs to accelerate the transition of research to operations and needs to invest more in the high-performance computing capabilities necessary to support S2S research. Mountain snowpack is an important component of many of our members' water supplies, and higher-resolution or variable resolution models that can more realistically simulate orographic precipitation are needed; this modeling will require dedication of more computing resources.
- We recommend that NOAA employ both a top-down and a bottom-up approach to improving forecasting skill, combining upgrades to its existing and pending dynamical and statistical models and a focused effort on data assimilation with regional-scale pilot studies that focus on factors potentially improving skills for these locations. Maintaining and expanding key observing systems that support and validate modeling, such as NOAA's Cooperative Observer Network, and establishing new specialized ocean observations that may contribute new predictive skill should be recognized as an important foundation for an enhanced S2S prediction system.
- The report should include a five-year schedule for achieving precipitation forecasting improvements and the budget necessary to realize the improvements.

WESTCAS appreciates the opportunity to submit these comments. Please feel free to contact me at westcas@westcas.org if you have any questions, or if you would like any additional information concerning these comments.

Sincerely,

Steve Bigley, President

The Voice of Water Quality in the Arid West

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